Psychological Medicine, 1981, **11**, 273–280
Printed in Great Britain

Ego-psychopathology: the concept and its empirical evaluation[1]

CHRISTIAN SCHARFETTER[2]

From the Psychiatrische Universitätsklinik, Zürich, Switzerland

SYNOPSIS A phenomenological construct of ego-consciousness, subdivided into 5 aspects (vitality, activity, consistency, demarcation, identity) may help for systematic overview of the schizophrenic syndrome. Its construction and empirical evaluation, and the data of 260 schizophrenic probands are presented. The therapeutic implications of the model are elaborated in body-oriented treatment, especially of acute and severely ill cases.

1. INTRODUCTION

Scientific theorizing calls for the creation of instrumental concepts to discover and combine data into a system of logical and meaningful coherence. The value of these concepts has to be proved by demonstrating their communicability to others; in applying the instrument a consensus of opinion is needed on the topic and on the consequences of explaining, understanding and – in medicine – giving a prognosis and providing therapeutic advice.

Our aim is to develop a system of psychopathology which remains not only on a descriptive level but whose symptoms and signs correlate with other data, whether these be physical, epidemiological or experimental. We search for a meaningful combination of the patient's experience, recorded as accurately as possible, with his own communication and observable behaviour. This product, the application of meaning (*Sinngebung*), is also a concept and has to be evaluated by the criteria to which I have referred.

Theorizing on the patient's experience and behaviour should not take place in the realm of speculative abstraction: for example, searching for abstract 'primary' disturbance or 'basic principle', whether they be called 'reduction of tension of associations' (Bleuler, 1911), autism (Bleuler, 1911; Minkowski, 1927), 'intrapsychic ataxia' (an imbalance between thymo- and noopsyche, Stransky, 1904*a*, *b*), 'primary' insufficiency of the psychic activity (Berze, 1914) or a disorder of libido economy.

In this paper I propose to discuss the concept of ego-consciousness. This is but one way of conceiving the ego. The concept of the ego is induced in many schemata, some of them dualistic (for example, in the Christian occidental anthropology), others trialistic (as in classical Indian philosophy and medicine, the Ayurveda). In the Buddhist teachings of Anatta the ego is recognized as an illusory composition of transitory functions. The Freudian metapsychological construct of the ego-apparatus was the start of psychoanalytical ego-psychology and has led to the notion of ego-assessment scales by Bellak. The ego in Jungian psychology is quite another matter, derived from the dialectic process of Jungian thinking. Other ego-concepts have been developed by various philosophers.

Every concept may have its value for a particular purpose. The phenomenological concept of ego-consciousness, created reductively from protocols of a patient's experience and his own functional interpretation of his behaviour, should serve the following purposes:

(1) To furnish a systematic presentation of the clinical polymorphism of so-called 'schizophrenic' phenomena. The systematization should help with the understanding of various symptoms and signs as an expression of and reaction to a disorder of ego-consciousness.

[1] This paper was presented at the meeting of the Royal College of Psychiatrists, London, 20 November 1980.

[2] Address for correspondence: Prof. Dr med. Christian Scharfetter, Psychiatrische Universitätsklinik, Postfach 68, CH-8029, Zürich 8, Switzerland.

(2) To provide guidelines for therapeutic activity. Symptoms give clues to the therapist on where, on what level of existence and how he can assist the patient's own attempt to overcome the threat to his mental health.

(3) The concept may illuminate new aspects of psychiatric nosology, genetics and biochemical findings.

2. FORERUNNERS OF THE CONCEPT

The concept of ego-activity is probably best known. Jaspers (1959, p. 101) spoke of '*Vollzugsbewusstsein*' (consciousness of acting), Kronfeld (1922) of changes of the consciousness of activity, Gruhle (1956, p. 17; 1932, p. 198) of '*Impulsqualität*' (quality of impulses) and paralysis of ego (1932, p. 189). Schneider (1967, p. 135) mentioned the experience of being directed by outside powers as a loss of '*Meinhaftigkeit*' (belonging to myself) and regarded it as a first-rank symptom. The '*automatisme*' of French psychiatrists partly includes the phenomenon.

The disturbance of ego-consistency prompted the coining of the term schizophrenias by Bleuler. Many authors have since dealt with this aspect of schizophrenic psychopathology (see Scharfetter, 1975). The disorders of ego-demarcation were described by Federn (1956, p. 34; *Ich-Grenze*, boundary of the ego).

Changes in ego-identity have long been well known to clinical psychiatrists. Many of them used the term 'identity' in a rather broad sense, so that nearly every aspect of ego-pathology was subsumed under this heading. It is noteworthy, however, that disorders of ego-vitality have rarely been taken into serious consideration. Jaspers' '*Daseinbewusstsein*' (consciousness of existing) is related to this aspect of the concept.

There is, therefore, no complete systematic phenomenological approach to ego-pathology, and no attempt has been made to provide an empirical testing of any of the concepts by scientific criteria.

3. THE CONCEPT OF EGO-CONSCIOUSNESS AND ITS DIMENSIONS

The term 'dimension' is used here *not* in a mathematical or statistical sense, but in the primary sense of a realm or region which may be seen in terms of aspects, levels or components of an imagined whole.

How the ego should be conceived defies a

Table 1. *The 5 basic dimensions of ego-consciousness*

Ego-vitality	Certainty of one's own liveliness (to exist as a living being)
Ego-activity	Certainty of one's own basic potency and self-determination (-control) of experience, thinking, acting
Ego-consistency	Certainty of existing as a coherent living unit
Ego-demarcation	Delineation of one's individual range (reach), distinguishing between ego and non-ego
Ego-identity	Certainty of one's own personal self-sameness concerning (human) morphology, physiognomy, gender and concerning genealogical origin (pedigree) and biographical (life-time) continuity

Table 2. *Pathology of ego-consciousness*

Ego-vitality	Experience of (or fear of) one's own death, dying, fading away of liveliness, of non-existence of self Experience of (or fear of imminent) ruin of the world, mankind, universe
Ego-activity	Lack (deficit) of one's own ability/potency/power for self-determined acting, thinking, feeling, perceiving Control by outside powers, manipulation by others Thoughts, feelings, perceptions made by others, inserted, taken away, stopped by others Feeling of being weak or lame or possessed by strange powers
Ego-consistency	Destruction of the coherence of one's self, the body, soul, the world, the universe as a unitary being, dissolution, splitting, multiplication Disruption of the connection of thinking and feeling, of will impulse and fulfilment of action
Ego-demarcation	Uncertainty concerning weakness or lack of the differentiation between ego and non-ego reach Deficit of a private sheltered range of body-experience, thinking, feeling Disturbance of the discrimination of inner and outer, of personal and external fields
Ego-identity	Loss of, changes of or doubts concerning own identity in respect of (human) Gestalt (morphology), physiognomy, gender, genealogical origin and biography

clear-cut definition, based on an operationalization of terms. We can grasp only particular aspects which may vary according to the situation. For the present purpose, what we call ego is an experience common to the people of a particular socio-cultural level. Under normal conditions the components or dimensions of this experience are given as self-understanding, natural and certain. But there are people who have lost this sense of certainty for shorter or longer periods as a result of various events – for example, the effects of hallucinogenic drugs, isolation, meditation, psychotic episodes, hypnogogic phenomena. From these people we can learn to differentiate between particular dimensions of the ego.

The 'ego' refers to the certainty of experience. It is I myself: living, functioning on my own, unified and coherent, delineated by a boundary open for communication in an afferent direction, self-identical through the course of life and in various situations.

Some schizophrenics can communicate very clearly, precisely and pointedly the threat of and danger to their self-experience, which I would divide into 5 basic dimensions (see Table 1). The pathology of ego-consciousness, laid out along these 5 basic dimensions, shows the symptomatology of the schizophrenic syndrome (Table 2).

4. THE STAGES OF CONSTRUCTION OF THE MODEL

Information for the construction of the model is derived at the symptom-level from 3 sources:

(1) The verbal experience of the patient should be recorded as accurately as possible (though it is clear that the capacity for verbal expression varies considerably).

(2) Observed behaviour (for example, repetitive movements, like the opening and closing of the fist) is interpreted according to the functional meaning it carries for the patient. Parakinesia, for example, is not to be regarded only as a sign indicating psychosis or as an irrational and non-understandable symptom of abnormal behaviour. Its significance for the patient must also be explored: the patient may, for example, feel compelled to open and close his fist to reassure himself that he can still exercise psychomotor volition.

(3) The patient's private self- and world experience, often regarded as 'delusional' by the observer, are taken as the patient's own interpretation of himself, his outlook and his life situation. The delusion of being split into many parts, for example, may reflect the impossibility of being aware of oneself as a coherent being and so indicate the destruction of ego-consistency.

The stages leading to the concept of ego-

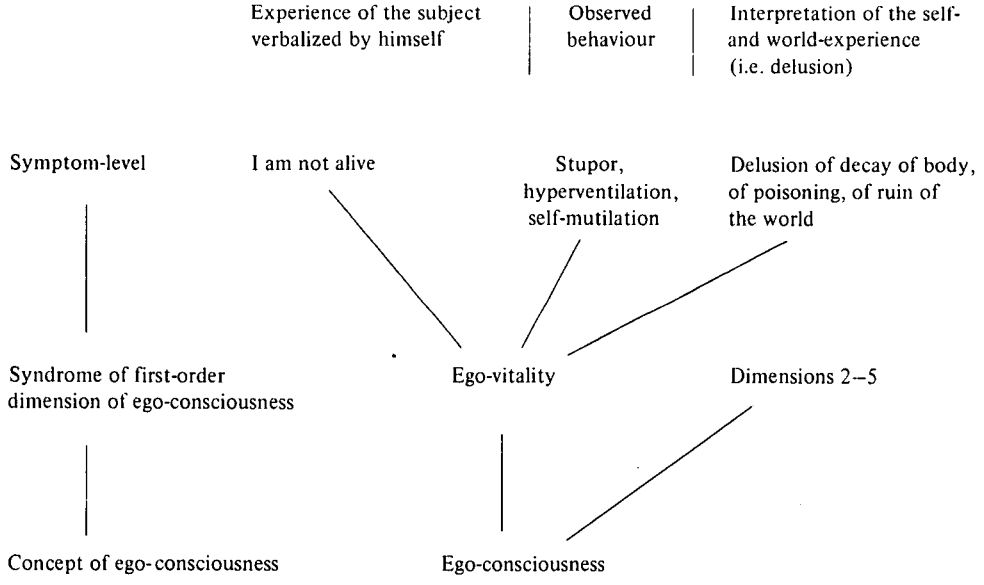

FIG. 1. The development of the concept.

Table 3. *Sources of information and information processing for construing the dimension 'ego-activity'*

Sources	Symptom-level	Information use/processing	Reduction
Verbalized experience of the subject	My thoughts are made by others I act directed by outside power	Directly	Disorder of ego-activity
Psychomotor behaviour	Echopraxia Stereotypia Automation Stupor Agitation	Indirectly i.e. interpretative	
Perception	Implanted, inserted, manipulated	Directly	
Cognition	Thoughts are made by others Chain of thoughts stopped Thoughts are taken away	Directly	
Affect	Anxiety	Directly	

vitality are demonstrated in Fig. 1. The information relating to symptom level is combined with and incorporated in a first-order syndrome, i.e. the dimension of ego-vitality. The other dimensions are formed in the same way. The 5 dimensions are then concentrated on the global concept of ego-consciousness.

The sources of information relating to different levels and the processing of information from symptoms to the syndrome of ego-activity are exemplified in Table 3. The indirect use of information, i.e. its interpretation in the light of a particular concept, has to be as close to the functional value of a 'symptom' as the patient is aware of himself.

5. THE CLINICAL ELABORATION OF THE CONCEPT

The clinical picture varies individually a great deal, but the psychotic phenomena can be ordered systematically by employing the criteria of acuteness, chronicity and severity of breakdown. The more acute and severe a disintegration of ego-consciousness, the less the patient can develop strategies of defence, avoidance, adaptation or coping. The reaction to the threatening experience will be intermediate and relatively uniform: the overwhelming anxiety of ego-disintegration leads to stupor, sometimes interrupted by agitation and the motor symptoms of parakinesia and stereotyped behaviour.

When disintegration is less acute and not overwhelmingly severe, the subject is better able to adapt to the change according to his or her personal characteristics. The influence of such factors as social circumstances, diagnosis, and hospital experience on this process of adaptation now falls within the province of social psychiatry.

The reactions to the threat of ego-disintegration may be systematized by using conventional functional complexes of psychopathology (see Table 4). Some symptoms, like stupor and automatism, are immediate reactions. Some may be interpreted functionally as attempts at self-protection or self-treatment. Catatonic hyperventilation, for example, can be a form of repetitive reassurance for the patient: 'I am breathing – I am still alive.' Again, the stereotyped opening and closing of the first serves as a repeated self-demonstration: 'It is I who can still move by my own volition.'

The therapeutic consequences of this functional interpretation of symptoms are obvious. We help the patient in his auto-therapeutic efforts by accompanying him in his endeavours; we assist his relearning of lost functions at the level of his own experiences which he indicates by his symptoms; we use symptoms as clues for therapeutic activity; and we introduce a duality of therapeutic cooperation, thus overcoming the psychotic isolation.

These few remarks on therapeutic consequences may serve as a reference to the 'body

Table 4. *Reactions to the threat of ego-disintegration*

(1) *Motor behaviour*
- Stupor and mutism
- Flexibilities cerea
- Automatism
- Stereotypia
- Agitation, aggression, fight
- Flight
- Self-mutilation
- Parakinesia
- Echopraxia, -lalia

(2) *Affective behaviour*
- Anxiety, panic, bewilderment
- Shy, suspicious, distrustful
- Delusional mood
- Aggressive, dysphoric affect
- Unstable, ambivalent, 'undecided'
- Parathymia (as a mirror of ambivalence, splitting, inconsistency of affect and content of mind, as an attempt to overcome overwhelming anxiety)
- Maniform self-elevation (interpreted as over-compensation)

(3) *Cognitive behaviour*
- Thinking disturbances (reflection of overwhelming anxiety and bewilderment, splitting – sign of the attempts to flight or defence threat and danger – sign of reaching new framework and fence for ego)
- Suspicious, distrustful interpretations
- Detection of 'new' meanings
- Delusional interpretation (autistic – derealistic self and world concept)
- Naming and thematization (mainly 'negative' delusions)
- Creation of private symbols, signs, language
- Creation of new self concept, role, identity
- Creation of new world, realm, science, religion
- Activity determined by delusional belief

(4) *Interactive behaviour*
- Shy, suspicious, dysphoric behaviour
- Withdrawal, isolation, shelter
- Avoidance of communication in:
  - miming
  - gesture
  - language: mutism, schizophasia, kryptolalia, kryptographia
- Mannerism (odd, stylized, artificial, non-spontaneous behaviour)
- New approach to society in new role (as healer, prophet, messiah etc.)

(5) *Cognitive–affective overcompensation*
- Maniform self-elevation
- Megalomanic self-elevation
- Delusions of omniscience, omnipotence (healing, creating new religion, founding new world and eventually cosmos)

oriented treatment' we have proposed (Scharfetter & Benedetti, 1978) as an additional therapeutic approach, especially for acute and severely ill patients. This approach to psychopathology should warn the psychiatrist that high dosages of neuroleptics may be a danger for patients who do not feel alive or who feel themselves unaware of their own activity.

6. THE EMPIRICAL EVALUATION OF THE CONCEPT

The questions for empirical studies of this concept are:

(1) Is the model coherent? This is tested by the communicability of the model to a number of raters.

(2) Is there a general factor of ego-consciousness which is empirically reproducible?

(2) Are the 5 dimensions, when evaluated by standardized and trained methods, empirically reproducible and sufficiently discriminated?

(4) By what statistical methods can the supposedly hierarchical structure of the 5-dimensional construct be tested?

There are many difficult *methodological problems* in the empirical testing of the model. For example, interview data can be collected only after remission of a severe episode. Thus, at the time of interview some experiences may be unrecorded because of amnesia, suppression or denial. Another methodological problem arises because the classical theory of psychological measurement cannot be applied, since the number of positive answers does not necessarily express the severity of the disturbance.

Our own empirical studies started in 1976 with a pilot phase (Phase I) and were continued from 1980 onwards (Phase II).

In *Phase I*, which followed classical test theory, a first questionnaire was constructed with 10 items per 'dimension'. One hundred schizophrenics were interviewed after remission of the severe psychotic episode. Item analysis demonstrated a high reliability for the whole test, but the discrimination between items was insufficient. Factor analysis yielded a general factor of 'ego-consciousness' and 5 subfactors, 3 of them corresponding to the theoretical concept. The logical coherence and communicability of the concept, tested by item-assignment by 20 psychiatrists, was found to be good (Kappa = 0·7). The compatibility of the concept with the data

Table 5. *Distribution of positive answers in study groups* (%)

Study population	Phase I		Phase II	
	100 interviews*	100 protocols†	20 case-histories‡	60 case-histories†
Vitality	59	52	70	58
Activity	86	74	100	95
Consistency	85	59	60	34
Demarcation	89	42	70	29
Identity	78	48	75	46

* Minimum of 2 positive answers per dimension ($N = 93$).
† Mean of 2 raters' findings.
‡ Mean of 3 raters' findings

('reality') was tested by comparing the results of 2 independent raters, who evaluated 100 protocols of clinical interviews. On 3 dimensions (vitality, activity, identity) the raters' consensus was high (60 % and above); however, the ratings showed more divergence on the other dimensions (Kappa could not be evaluated because of multiple diagnostic assignments).

In 100 interviewed probands (in-patients, acute and chronic cases, all unselected) and in the analysis of 100 psychopathological protocols (collected for other psychopathological studies) the frequency of disorders of the 5 dimensions found is given in Table 5. A Guttmann scale and Rasch model were applied to study the hypothetical hierarchical structure, but this could not be rendered sufficiently clear by these statistical procedures.

Phase II was evaluated without the use of classical test theory. Drawing on the consequences of the results of the pilot phase, we improved the questionnaire by including more items (169 in all, 30–35 per dimension) and making a more precise formulation.

The logical coherence and communicability of the concept were tested by item assignment of 20 raters (students of psychology with comparable knowledge of the concept who were given an introductory briefing). The consensus of raters was more than Kappa 0·5. The cumulative frequency of errors demonstrated difficulties in evaluating disorders of consistency.

The compatibility of the concept with the given subject was then tested by defining the consensus of 3 raters, who evaluated independently the same 20 case-histories of schizophrenics. The overall consensus was good (Kappa more than 0·5), being highest on the dimensions of vitality and activity.

Table 6. *The approximate frequency (absolute/per cent) of positively diagnosed ego-pathology* ($N = 260$)

	Absolute	%
Vitality	142	55
Activity	211	81
Consistency	159	61
Demarcation	142	55
Identity	149	57

In these 20 case-histories the distribution of disorders in the 5 dimensions was: vitality, 14 (70 %); activity, 20 (100 %); consistency, 12 (60 %); demarcation, 14 (70 %); identity, 15 (75 %) (Table 5).

Ego-psychopathological analysis of 60 case-histories of schizophrenics, evaluated by 2 raters, led to the following result: vitality, 35 (58 %); activity, 57 (95 %); consistency, 20 (34 %); demarcation, 17 (29 %); identity, 28 (46 %) (Table 5). In sum, the approximate frequency of positively diagnosed ego-pathology in the total population of 260 is given in Table 6.

7. CORRELATION OF EGO-PSYCHOPATHOLOGY WITH TRADITIONAL PSYCHOPATHOLOGY

According to our hypothesis, ego-psychopathological findings in the 5 dimensions should correlate positively with certain symptoms of classical psychopathology. Thus a positive correlation between disorders of ego-vitality and catatonic signs was to be expected; and changes in ego-identity should correlate positively with megalomanic delusions of a higher pedigree, function or role in society. To test these hypotheses, 60 case-histories of schizophrenics were

evaluated independently by 2 raters in respect of ego-psychopathology and traditional psychopathology documented by the AMP, an international research group, primarily from German-speaking countries, whose aim is the development of standardized methods of evaluation and documentation in psychiatry (Scharfetter, 1972, 1974). The definitions of AMP-items correspond to traditional psychopathology.

Focussing only on correlations of more than 0·2 in the evaluation by the 2 raters we found a positive correlation, in support of our hypotheses, between disorders of ego-vitality and catatonic signs (0·2–0·35), ego-activity and autism (0·29–0·31), ego-consistency and AMP-item 56 (0·2–0·41), which includes most of the personality disorders as defined by traditional psychopathology. Ego-identity correlated positively with grandiose delusions (0·18–0·21). These correlation figures are not high, possibly because of the relatively small population studied so far, and since the 2 psychopathological systems differ greatly.

8. METHODOLOGICAL PROBLEMS, NOSOLOGICAL AND THERAPEUTIC IMPLICATIONS

This report is concerned with the present position in the study of the new concept. The next step will be a further improvement of the questionnaire and an elaboration of a manual for rating. For judging the severity of pathology, i.e. scaling of the dimensions, we have established an instrument for categorizing the answers.

From the clinical point of view we assume a hierarchical interdependency of the 5 dimensions. Vitality is the prerequisite for experiencing oneself as active; activity mediates consistency, which is one elementary condition for demarcation. Only where these 4 dimensions are not too severely disturbed can the problem of identity arise. In patients who are not too severely ill, all 5 dimensions may be experienced as threatened, so that the hypothetical hierarchical structure can be demonstrated only in severely ill subjects. This involves other methodological problems of sampling and interviewing. Guttmann scales and various types of cluster analysis will be used in the investigation. The further scientific evaluation of the concept is not to be discussed in this paper, but we plan to study correlations with ego-assessment scales (Bellak *et al.* 1973; Bellak & Sheehy, 1976), and with anxiety and the hallucinogenic psychoses.

The theoretical implications of the model (if it can be accepted as a useful scientific instrument) is sketched very briefly in this paper. It seems that disorders of ego-vitality are common to patients with severe, especially early catatonic schizophrenia and with melancholia. As we have found independently from these studies (Scharfetter, 1979; Scharfetter & Nuesperli, 1980), they also share familial heredity characteristics. In the families of catatonics there was found to be an increased rate of morbidity not only concerning schizophrenia (specially catatonia), but also depressive disorders. Among the relatives of probands with depressive disorder, a higher incidence of catatonic schizophrenia was detected: this was evaluated independently from the original findings. Both types of psychoses also tend towards a phasic course.

Finally, a word about the therapeutic implications of this psychopathological model. Deep within their bodily existence severe schizophrenics are very disordered. They may even lose the certainty of being alive as a coherent being demarcated from others and determining their own activity. Treatment has to help them to relearn, train, and revive these elementary functions, using the clues furnished by understanding the functional meaning of the symptoms. The systematic elaboration of this form of intervention we have called body-oriented treatment (Scharfetter & Benedetti, 1978). It may be seen as a form of behaviour therapy, based on a clear psychopathological evaluation of what the patient really experiences and not by speculations about somato- or psychosocio-genetic aetiology. This treatment takes place within the framework of a therapeutic relationship. We have to breathe, to move, to stay with the patient to help reconstruct his deficient ego-consciousness.

This overview of the path from phenomenology via theory to clinical practice and empirical investigation illustrates one way in which psychopathological investigation can be applied to schizophrenia.

REFERENCES

Bellak, L. & Sheehy, M. (1976). The broad role of ego functions assessment. *American Journal of Psychiatry* **133**, 1259–1264.

Bellak, L., Hurvich, M. & Degiman, H. K. (1973). *Ego Functions in Schizophrenics, Neurotics and Normals*. Wiley: New York.

Berze, J. (1914). *Die primäre Insuffizienz der psychischen Aktivität; ihr Wesen, ihre Erscheinungen und ihre Bedeutung als Grundstörung der Dementia praecox und der Hypophrenie überhaupt*. Deuticke: Leipzig and Vienna.

Bleuler, E. (1911). Dementia praecox oder Gruppe der Schizophrenien. In *Handbuch der Psychiatrie* (ed. G. Aschaffenburg), p. 4. Deuticke: Leipzig and Vienna.

Federn, P. (1956). *Ich-Psychologie und die Psychosen*. Huber: Bern and Stuttgart.

Gruhle, H. W. (1932). Die Schizophrenie: Allgemeine Symptomatologie. Die Psychopathologie. In *Handbuch der Geisteskrankheiten*. Vol. 9 (5) (ed. O. Bumke), pp. 135–210. Springer-Verlag: Berlin.

Gruhle, H. W. (1956). *Verstehende Psychologie-Erlebnislehre* (second edn). Thieme: Stuttgart.

Jaspers, K. (1959). *Allgemeine Psychopathologie* (seventh edn). Springer-Verlag: Berlin.

Kronfeld, A. (1922). Ueber schizophrene Veränderungen des Bewusstseins der Aktivität. *Zeitschrift für die gesamte Neurologie und Psychiatrie* **74**, 15–68.

Minkowski, E. (1927). *La schizophrénie. Psychopathologie des schizoides et des schizophrènes*. Payot: Paris.

Scharfetter, C. (1975). The historical development of the concept of schizophrenia. In *Studies of Schizophrenia* (ed. M. H. Lader), pp. 5–9. *British Journal of Psychiatry*, Special Publication no. 10. Headley: Ashford, Kent.

Scharfetter, C. (1972). *Das AMP-System. Manual zur Dokumentation psychiatrischer Befunde*. Springer-Verlag: Berlin.

Scharfetter, C. (1974). AMP System. Report on a system of psychiatric documentation. In *Pharmacopsychiatry*, Vol. 7 (ed. P. Pichot), pp. 64–66. S. Karger: Basle.

Scharfetter, C. (1979). Klassifikation endogener Psychosen aus genetischer Sicht. *Schweizer Archiv für Neurologie, Neurochirurgie und Psychiatrie* **125**, 301–313.

Scharfetter, C. & Benedetti, G. (1978). Leiborientierte Therapie schizophrener Ich-Störungen. Vorschlag einer zusätzlichen Therapiemöglichkeit und grundsätzliche Ueberlegungen dazu. *Schweizer Archiv für Neurologie, Neurochirurgie und Psychiatrie* **123**, 239–255.

Scharfetter, C. & Nuesperli, M. (1980). The group of schizophrenias, schizoaffective psychoses and affective disorders. *Schizophrenia Bulletin* **6**, 586–591.

Schneider, K. (1967). *Klinische Psychopathologie* (eighth edn). Thieme: Stuttgart.

Stransky, E. (1904*a*). Zur Auffassung gewisser Symptome der Dementia praecox. *Neurologisches Zentralblatt* **23**, 1074–1085; **24**, 1137–1143.

Stransky, E. (1904*b*). Zur Lehre von der Dementia praecox. *Zentralblatt für die Nervenkrankheiten* **27**, 1–19.